

List of Contents

NUMBER 1

i Softstrip data strips containing the table of contents

Peter R. Bono 1 Introduction by the Associate Editor

Eugene Fiume 3 *Computers & Graphics* Best Paper Award (1986–1988) for "Bit-mapped graphics: A semantics and theory"

I. Navazo 5 Technical Section

5 Extended Octtree representation of general solids with plane faces: Model structure and algorithms

Cathy Sobhanpanah 17 Extension of a boundary representation technique for the description of N dimensional polytopes

C. B. Millham and J. L. Zheng 25 A linear pivoting heuristic procedure for computing the curve of intersection of two bicubic surface patches

R. Cossu, M. Ercoli and L. Moltedo 39 An extension of CGI functions for generation and manipulation of raster images

Javier Sanchez-Reyes 49 Laser printers for rendering surfaces

Clifford A. Pickover 55 Chaos and Graphics

55 The new "Chaos and Graphics" section of *Computers & Graphics*

Akhlesh Lakhtakia 57 A simple gasket derived from prime numbers

Akhlesh Lakhtakia and Russell Messier 59 Self-similar sequences and chaos from Gauss sums

Clifford A. Pickover 63 Circles which kiss: A note on osculatory packing

Gregor Lux-Mülders 69 Eurographics '88 Award Papers

69 Eurographics '88 Conference

Maarten J. G. M. van Emmerik 71 Creation and modification of parametrized solid models by graphical interaction

Xavier Pintado and Eugene Fiume 77 Grafields: Field-directed dynamic splines for interactive motion control

Mel Slater, Allan Davison and Mark Smith 83 Liberation from rectangles: A tiling method for dynamic modification of objects on raster displays

Jürgen Bettels, Peter R. Bono, Eileen McGinnis and Joachim Rix 91 Short Technical Notes/Technical Forum/Systems

91 Guidelines for determining when to use GKS and when to use PHIGS

A. Arokiasamy	99 Homogeneous coordinates and the principle of duality in two dimensional clipping
<i>Software Survey Section</i>	
Michael S. Youngblood	101 AT&T's Image Capture Board (ICB) and TIPS software
<i>Computer Graphics & Education</i>	
J. B. Cummings	111 Computers, the cutting edge of learning
Harold J. McWhinnie	115 Development of visual languages with interactive video disks
<i>Graphics Art</i>	
Mieczyslaw Szyszkowicz	119 Images of nonlinearity
Mieczyslaw Szyszkowicz	121 Computer graphics generated by numerical iteration
<i>News and Views</i>	
Kenvin Lyman	127 An elegant merging
<i>Announcements</i>	
Jan van den Bos	129 Pictorial information systems: Call for papers (revised dates)
	130 <i>Computers & Graphics</i> schedule, special issues
	130 Eurographics '89, Hamburg, FRG
	131 <i>Erratum</i>
	I Software survey section

NUMBER 2

Arie Kaufman	i Softstrip data strips containing the table of contents
<i>3D Voxel-Based Graphics</i>	
Daniel Geist and Michael W. Vannier	133 Guest Editor's introduction: 3D voxel-based graphics
G. J. Jense and D. P. Huijsmans	135 PC-based 3-D reconstruction of medical images
Reuven Bakalash and Arie Kaufman	145 Interactive voxel-based graphics for 3D reconstruction of biological structures
T. Y. Kong	151 MediCube: A 3D medical imaging architecture
	159 A digital fundamental group
<i>Technical Section</i>	
Avraham Margalit and Gary D. Knott	167 An algorithm for computing the union, intersection or difference of two polygons
Jeffrey Shallit and Jorge Stolfi	185 Two methods for generating fractals

L. Alvisi and G. Casciola 193 On the Two Array Mask hidden-line algorithm

Theoharis Theoharis and Ian Page 207 Polygon rendering on a dual-paradigm parallel processor

L. Piegl 217 A negative experiment with univariate blending functions

H. Ruder, T. Ertl, F. Geyer, H. Herold and U. Kraus 223 Line-of-sight integration: A powerful tool for visualization of three-dimensional scalar fields

Jacques Weber, Pierre-Yves Morgantini, Peter Fluekiger and Michel Roch 229 Molecular graphics modeling of organometallic reactivity

Luiz Ary Messina, Annelore Buhmann, Marion Günther and Georg Köberle 237 *Computer Graphics & Education*
Teachware development for education in CAD

Carlo E. Vandoni 243 *News and Views*
Development of a large graphics-based application package

Sherri Shepard and Andrew Simoson 253 *Chaos and Graphics*
Scouts in hyperspace

T. Richards 261 Graphical representation of pseudorandom sequences

M. Michelitsch and O. E. Rössler 263 A new feature in Hénon's map

Alan Norton 267 Julia sets in the quaternions

Jan van den Bos 279 *Book Reviews*
GKS Theory and Practice, edited by P. R. Bono and I. Herman; and *Computer Graphics Software Construction*, by J. R. Rankin

281 *Announcements*
The role of Hungarians in the scientific and technological progress of the world—II. Scientific Meeting, Budapest, Hungary

282 HCI International '89, Boston, MA, USA

283 Eurointegrate '89, Hamburg, FRG

285 *Computers & Graphics* schedule, special issues

285 Eurographics '89, Hamburg, FRG

I Software Survey Section

NUMBER 3

i Softstrip data strips containing the table of contents

Günther F. Schrack 287 *Computer Graphics in Canada*
 Guest Editor's introduction
 Computer graphics in Canada: Past and present

**Deborah R. Fowler,
 James Hanan and
 Przemyslaw Prusinkiewicz** 291 Modelling spiral phyllotaxis

**Timothy C. Lethbridge and
 Colin Ware** 297 A simple heuristically-based method for expressive
 Stimulus-Response animation

**Gavin Miller and
 Andrew Pearce** 305 Globular dynamics: A connected particle system for animating viscous fluids

**B. Sinclair, A. G. Hannam,
 A. A. Lowe and
 W. W. Wood** 311 Complex contour organization for surface reconstruction

Eugene Fiume 321 Active objects in the construction of graphical user interfaces

**Michel P. Devine and
 Derick Wood** 329 *SEPARATION™* in d dimensions or strip mining in asteroid fields

**I. Gargantini, G. Schrack and
 H. H. Atkinson** 337 Adaptive display of linear octrees

Steve Falk 345 Three-dimensional modelling and Piero della Francesca's use of linear perspective

Martin Roche 349 *Technical Section*
 Defining a faceted generalized cylinder by projections of cross sections

**Itzhak Wilf and
 Yehuda Manor** 355 Tracking parameterized algebraic curves on raster displays

Günter Aumann 361 Approximate development of skew ruled surfaces

C. Guerrini and G. Spaletta 367 An image reconstruction algorithm in tomography: A version for the CRAY X-MP vector computer

**Varol Akman and
 Wm. Randolph Franklin** 373 Representing objects as rays, or how to pile up an octree?

**Pedro Faria Lopes and
 Mário Rui Gomes** 381 *News and Views*
 Computer animation in Portugal

Ian D. Entwistle 389 *Chaos and Graphics*
 Julia set art and fractals in the complex plane

Michael Keith	393 Artistic choice in the display of chaotic dynamics
Harry Seldom	397 Iteration as a creative process in visual art
Jürgen Schönhut	<i>Announcements</i> 399 Call for papers
Carlo E. Vandoni	400 Call for Eurographics membership 402 Eurographics membership application forms
	I Software Survey Section
	NUMBER 4
	j Softstrip data strips containing the table of contents
José L. Encarnaçao	407 Editor-in-Chief's introduction
Peter van Oosterom and Jan van den Bos	<i>Technical Section</i> 409 An Object-Oriented approach to the design of Geographic Information Systems
Andrew Hunter and Philip J. Willis	419 Breadth-first quad encoding for networked picture browsing
Charles X. Durand	433 Bit map transformations in computerized 2D animation
Jack Bryant and Clifford Krumvieda	441 Display of discrete 3D binary objects: I—Shading
Hanan Samet	445 Implementing ray tracing with octrees and neighbor finding
Paul G. Bao and Jon G. Rokne	461 Quadruple-step line generation
Binh Pham	471 Quadratic B-splines for automatic curve and surface fitting
Shin-Ting Wu	477 A new combinatorial model for boundary representations
Marshall Walker	487 Boolean operations with enriched octtree structures
F. Major, J. Malenfant and N. F. Stewart	497 Distance between objects represented by octrees defined in different coordinate systems
Uday G. Gujar and I. V. Nagendra	505 Construction of 3D solid objects from orthographic views
A. Buhmann, M. Günther and G. Köberle	<i>Computer Graphics & Education</i> 523 Computer graphics as a tool in training and education: A COMETT project

J. R. Woodwork	529	<i>News and Views</i> Comments on "extended octrees"
Wentian Li	531	<i>Chaos and Graphics</i> Complex patterns generated by next nearest neighbors cellular automata
Stephen T. Welstead and Thomas L. Cromer	539	Coloring periodicities of two-dimensional mappings
S. R. Ramesh	545	Graphics of truncated sinusoids
Ian D. Entwistle	549	Methods of displaying the behaviour of the mapping $z \rightarrow z^2 + \mu$
Mario Markus and Benno Hess	553	Lyapunov exponents of the logistic map with periodic forcing
Peter D. Fortescue and Geoffrey S. Puterbaugh	559	A note on the practical use of the VGA monitor for the display of fractal images
P. C. Mathias, L. M. Patnaik and Sudha Ramesh	561	<i>Short Technical Notes/Tutorials/Systems</i> Systolic architectures in curve generation
Samuel D. Huang, Raul Lopez and Jan Siemieniewski	571	<i>Graphics & Art</i> The discovery of hidden facial images in the paintings of Vincent Van Gogh and Paul Gauguin by using com- puter graphics enhancement techniques
	579	<i>Announcements</i> Eurographics '90—Call for participation
	582	Eurographics workshop on object oriented graphics— First call for contributions
Chandra S. Desai	583	Announcement and call for papers
	I	Volume 13 list of contents and author index
	XI	Software Survey Section